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VALVULAR HEART DISEASE

THE VALUE OF DOPPLER-BASED RENAL ARTERIAL RESISTIVE INDEX TO PREDICT ACUTE KIDNEY INJURY AFTER TRANSCATHETER AORTIC VALVE IMPLANTATION

ACC Poster Contributions
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Background: Acute kidney injury (AKI) is a strong predictor of mortality after transcatheter aortic valve implantation (TAVI). The Doppler-based renal arterial resistive index (RI) is used to identify patients developing AKI as it correlates inversely with effective renal blood flow and creatinine clearance.

Methods: TAVI was performed with the 18F-CoreValve™ prosthesis via transfemoral access. Renal RI was determined before, 4h, 24h, 48h, 72h, and 7 days after TAVI in 40 consecutive patients (mean age 82.0±5.3 years, STS mortality score 9.7±7.7%, logistic EuroSCORE 29.8±16.8%).

Results: Overall procedural success rate was 98% with a 30-day mortality of 5.4% and an 1-year mortality of 24.3%. At baseline, renal RI showed no difference between patients who developed AKI and those who did not (0.78±0.09 vs. 0.80±0.11, P=0.47). Already 4 hours after TAVI, the RI significantly increased in patients developing AKI (0.94±0.08 vs. 0.79±0.06, P=0.001) and was related to the grade of post-procedural, paraprosthetic regurgitation (P=0.003). A cut-off value for the RI of ≥0.83 (AUC 0.88, 95% CI: 0.73-0.96, P=0.0001) predicted AKI after TAVI with a sensitivity of 91% and a specificity of 92% and was superior to serum creatinine and cystatin c.

Conclusions: Measurement of the Doppler-based renal RI helps to early identify patients at risk for AKI after TAVI. Our results suggest that the RI might mirror hemodynamic alterations after TAVI rather than local renal damage.